What is claimed is:

1. A method for analyzing a semiconductor die, the method comprising:

thermally coupling a heater having a plurality of heating elements therein to a semiconductor die;

while operating the die, selectively controlling the heating elements and therein causing at least one of the heating elements to heat at least one adjacent portion of the die; and

analyzing the die via the operation and heating.

2. The method of claim 1, wherein operating the die includes running a test pattern on the die suspected to cause a failure.

3. The method of claim 1, wherein operating the die includes electrically coupling the die to a signal generator adapted to supply test signals to the die.

4. The method of claim 1, further including detecting that the die is malfunctioning.

5. The method of claim 4, further comprising:

identifying the portion of the die being heated at the time that a malfunction is detected; and

correlating the portion of the die being heated to a critical timing path.

6. The method of claim 5, further comprising probing circuitry in the critical timing path and determining therefrom the nature of a defect.

7. The method of claim 1, wherein the die includes at least one of: a flip-chip bonded die and a wire-bonded die.

8. The method of claim 7, wherein the die is a wire-bonded die, and wherein coupling the heater to the die comprises:

placing the heater on a die package;

placing the semiconductor die on the heater; and

wire-bonding the semiconductor die to the package.

9. The method of claim 8, further comprising electrically coupling the heater to the package, wherein selectively controlling the heating elements includes applying an electrical signal to the heater via the electrical coupling to the package.

10. The method of claim 1, wherein selectively controlling the heating elements includes causing the die to heat to a selected temperature.

11. The method of claim 1, wherein selectively controlling the heating elements includes heating a plurality of the heating elements in a selected sequence.

12. The method of claim 1, wherein selectively controlling the heating elements includes causing at least two of the heating elements to generate heat, and wherein the at least two of the heating elements are located sufficiently distant from each other so that heat from one of the elements does not interfere with heat from another one of the elements in heating the die.

13. The method of claim 1, wherein selectively controlling the heating elements includes causing the at least one heating element to generate pulses of heat.

14. The method of claim 1, wherein selectively controlling the heating elements comprises:

grouping the heating elements into selected groups, each group having two or more heating elements;

causing the selected groups to heat in a sequence;

detecting a response from the die that indicates that the die is operating defectively; and

in response to detecting the defective operation, identifying the selected group being caused to heat when the response is detected; and

selectively operating individual heating elements of the selected group.

15. The method of claim 1, wherein selectively controlling the heating elements comprises:

detecting a temperature characteristic related to the heat being generated; and

in response to the detected temperature characteristic, controlling the heating via a feedback loop.

16. The method of claim 15, wherein detecting a characteristic of the heat being generated includes detecting a temperature using a temperature sensor located in the heater.

17. The method of claim 1, wherein analyzing the die includes detecting a response from the die, further comprising storing the detected response in a computer arrangement and using the stored response for analyzing the die.

18. The method of claim 1, wherein the die is a flip-chip die, further comprising, prior to thermally coupling the heater to the die, thinning a back side of the flip-chip die, and wherein thermally coupling the heater to the die includes coupling via the thinned back side of the die.

19. A system for analyzing a semiconductor die, the system comprising:

a plurality of heating means, arranged adjacent the die, for heating selected portions of the die;

control means for selectively controlling the heating means and therein causing at least one of the heating means to heat at least one adjacent portion of the die;

operating means for operating the die; and

detection means for detecting a response from the die.

20. A system for analyzing a semiconductor die, the system comprising:

a heating chip having a plurality of heating elements arranged adjacent the die and adapted to heat selected portions of the die;

a controller adapted to selectively control the heating elements and therein cause at least one of the heating elements to heat at least one adjacent portion of the die;

a testing device adapted to operate the die; and

a detector adapted to detect a response from the die.

21. The system of claim 20, wherein each heating element includes at least one of: resistive metal, a transistor, a diode, doped metal and a polysilicon trace.

22. The system of claim 20, wherein one of the heater elements includes a transistor having a gate, and wherein the heater further comprises a temperature sensor coupled to the base of the transistor and adapted to provide feedback to bias the gate, and therein regulate the current through the transistor and control the heat generated.

23. The system of claim 22, wherein the temperature sensor includes at least one of: a diode and a transistor.

24. The system of claim 20, further comprising a stage to hold the die and electrically couple the die to the testing device.

25. The system of claim 20, further comprising a computer communicatively coupled to the tester and adapted to control the tester.

26. The system of claim 25, wherein the computer is further communicatively coupled to the controller and adapted to direct the controller's operation.

27. The system of claim 20, wherein the detector and the testing device are included in a single arrangement.

28. The system of claim 27, further comprising a computer communicatively coupled to the controller, the testing device, and the detector, and wherein the computer is adapted to control the analysis of the die and to provide response results from analysis for review by a user.

29. The system of claim 20, wherein the heater chip further comprises a control register adapted to provide control signals to the heating elements.

30. A method for analyzing a semiconductor die, the method comprising using a plurality of heating elements to selectively heat regions of an operating die and analyzing the die therefrom.